

ABSTRACT OF THE DISCLOSURE

When a Levenson phase shift mask is manufactured, relationship of optical conditions (numerical aperture, partial coherence factor, and others) of an optical system of an exposure device used for exposure and a mask structure (amount of excavation of a substrate, thickness of a phase shifter, or the like) with displacement of a pattern to be transferred by exposure is sought by simulation, and optical conditions and a mask structure that limit displacement of the pattern within a required range are selected, taking manufacturing errors of the mask into consideration. Then the selected optical conditions and mask structure are examined whether they ensure a desired exposure tolerance and a desired focal depth, and this procedure is repeated until an acceptable result is obtained. Once an acceptable result is obtained, the optical conditions and the mask structure are employed to fix the exposure device to the determined optical conditions and actually start fabrication of the mask having the determined mask structure. Thereby, upon exposure using the phase shift mask, displacement of the transfer pattern is minimized, which results in improvement of the transfer positional accuracy, while ensuring a lithography process tolerance.